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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,189	03/29/2001	James T. Weglewski	56291US002	1220

32692 7590 05/04/2004

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EXAMINER	
BOYD, JENNIFER A	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,189	WEGLEWSKI ET AL.	
	Examiner	Art Unit	
	Jennifer A Boyd	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1 page*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Applicant's Amendments and Accompanying Remarks, filed February 20, 2004, have been entered and have been carefully considered. Claims 1 – 24 are pending. In view of Applicant's Arguments, the Examiner withdraws all previously set forth rejections as detailed in paragraphs 3 – 5 of the previous Office Action dated December 18, 2003. However, after an updated search, additional art has been found. The invention as currently claimed is not found to be patentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1 - 5, 12 – 20 and 23 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welke et al. (EP 1026218 A1) in view of Menzies et al. (US 2003/0104746) and Arakawa et al. (JP 57143380).

Welke is directed to a UV-curable polyester/epoxy adhesive tape that is capable of being cured upon exposure to actinic radiation (Abstract).

As to claims 1 – 3, Welke teaches an adhesive layer comprising an epoxy containing material, an amorphous and branched polyester having a glass transition temperature of not more than 10°C and an effective amount of photoinitiator when needed to initiate the curing (page 3, lines 1 – 10). The epoxy containing material is typically present in the amount of 20 – 70% by

weight of the adhesive layer (page 6, lines 2 – 4). The polyester is typically present in the amount of 10 – 80% by weight of the total weight of the adhesive layer and preferably 15 to 75% by weight (page 5, lines 3 – 6). The photoinitiator is typically present in the amount of 0.01 – 5% by weight and preferably between 0.1 – 2% by weight (page 7, lines 29 – 31). The adhesive layer can also include a hydroxy functional material (page 7, lines 31 – 34) and various fillers, adjuvants, additives and the like (page 8, line 58 and page 9, lines 1 – 7). The hydroxy material is present in the amount of 5 – 50% by weight of the adhesive layer (page 8, lines 55 – 58). The additives may be present in the amount of 0 – 50% by weight of the adhesive layer or more preferably 0 – 15% by weight (page 9, lines 1 – 8). Welke teaches that the adhesive tapes comprise at least one backing which can include a non-woven material (page 9, lines 21 – 24). Since the adhesive is coated on the non-woven material in a molten state, it would be reasonable to assume that the adhesive would saturate or at least penetrate material.

As to claim 4, Welke teaches an adhesive layer comprising an epoxy material, a polyester resin, hydroxy material and photoinitiators. The epoxy material contains preferably a mixture of two or more epoxy resins in order to modify and adapt the mechanical properties of the cured adhesive with respect to specific requirements (page 5, lines 27 – 30). The molecular weight of the epoxy-containing materials may vary from low molecular weight monomeric or oligomeric materials with a molecular weight, e.g., of about 100, to polymeric resins with a molecular weight of about 50,000 or more (page 5, lines 19 – 23). The polyester resin is an amorphous and branched polyester having a glass transition temperature of not more than 10°C and preferably not more than 5°C, which overlaps the Applicant's range of less than about -5°C (page 3, lines

57 – 58). The hydroxy material may comprise one or more further hydroxy functional compounds (page 8, lines 52 – 54). The hydroxy material can comprise polyoxypropylene glycols (page 8, lines 34 – 35) and phenoxy resins (page 8, line 3). The polyoxyproplyene glycols have a molecular weight of about 31 to 2500 (page 8, lines 1 – 5) and the phenoxy resins have a number average molecular weight of less than 50,000, preferably in the range of 10,000 to 20,000 (page 8, lines 36 – 40). The photoinitiator is typically present in the amount of 0.01 – 5% by weight and preferably between 0.1 – 2% by weight (page 7, lines 29 – 31).

As to claims 12, 15 and 16, it should be noted that the Examiner has given no patentable weight to "a structural bonding tape", "a roll of tape" and "a cured sheet of adhesive" respectively. Furthermore, it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). The limitations of claims 12, 15 and 16 are discussed above.

As to claim 13, Welke teaches that the pressure-sensitive tapes comprise at least one backing (page 9, lines 21 – 25).

As to claims 14, 23 and 24, Welke teaches that the backings may be selected from a group of materials comprising polymeric films, papers and non-wovens (page 9, lines 21 – 24). The second substrate can be a different material than the first substrate.

As to claim 5, Welke teaches the claimed invention except fails to disclose that the nonwoven can comprise polyester.

Menzies et al. is directed to laminated elastic composites suitable for use in tapes (page 1, [0002]). Menzies teaches that the composite comprises a layer of pressure-sensitive adhesive 42 applied on one of the nonwoven cover webs 18, 32 (see Figure 8 and page 5, [0064]). Menzies teaches that the nonwoven web can be made of any thermoplastic polymer such as polyester, polypropylene and nylon (page 3, [0049]). In Example 16, Menzies teaches that the nonwoven web can comprise a layer of Trilobal PBN-II nylon (page 13, [0131]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyester nonwoven as suggested by Menzies as the substrate of the composite of Welke motivated by the desire to use a commonly used and cost-efficient material.

As to claims 1, 17 and 19, Welke in view of Menzies teaches the claimed invention except fails to disclose that that the adhesive mixture completely embeds at least one web of fibers.

Arakawa et al. is directed to a pressure-sensitive double adhesive tape (Title). Arakawa teaches impregnating a non-woven cloth with a flexible epoxy resin to form a pressure sensitive adhesive layer on both sides of the cloth (Abstract). Arakawa notes that impregnating the cloth improves strength and adherence properties of the tape (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to fully embed, or impregnate, the web material as suggested by Arakawa rather than partially embedding the web material as implied by Welke motivated by the desire to improve the strength and adherence properties of the tape.

As to claims 1, 4, 5 and 17, although Welke in view of Arakawa do not explicitly teach the claimed air permeability value of more than about 600 cfm/ft^2 as required by claims 1 and 17 or of more than about 800 cfm/ft^2 as required by claim 5 as measured by ASTM D737-75 or ASTM D737-80, and a light permeability value of more than about 10% as required by claims 1 and 17 or of more than about 75% as required by claim 5 as measured by Light Permeability Text LPT, it is reasonable to presume that an air permeability value of more than about 600 cfm/ft^2 as required by claims 1 and 17 or of more than about 800 cfm/ft^2 as required by claim 5 as measured by ASTM D737-75 or ASTM D737-80, and a light permeability value of more than about 10% as required by claims 1 and 17 or of more than about 75% as required by claim 5 as measured by Light Permeability Text LPT is inherent to Welke. Support for said presumption is found in the use of like materials (i.e. a non-woven web comprising fibers having a diameter less than 20 microns and a basis weight of less than 30 grams per square meter), which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Welke product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

As to claims 1, 4 – 5 and 20, Welke in view of Arakawa disclose the claimed invention except for that the fibers have a basis weight of less than 30 grams per square meter as required by claim 1, less than 25 grams per square meter as required by claim 5, comprises polyester fibers having an average diameter of less than 20 microns as required by claim 1 or 7 microns as required by claim 5, the first epoxy resin comprises 27% by weight, the second epoxy comprises 22% by weight of the adhesive, the first hydroxy-containing compound comprises 10% by weight and has a hydroxy equivalent weight of about 284 and the second hydroxy-containing

compound comprises 10% by weight of the adhesive and has a hydroxy equivalent weight of about 38 as required by claims 4 and 20 and a first epoxy resin having an epoxy equivalent weight of about 185 to 192 and a second epoxy resin having an epoxy equivalent weight of about 525 to about 550 as required by claim 20. It should be noted that fiber diameter, basis weight, weight percentage, hydroxy equivalent weight and epoxy equivalent weight are result effective variables. For example, as the fiber diameter and the basis weight decreases, the composite becomes more flexible and lightweight. For example, if the amount of the first epoxy or hydroxy resin increased, the epoxy would exhibit more properties of the first epoxy resin rather than the second epoxy resin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an adhesive where fibers have a basis weight of less than 30 grams per square meter as required by claim 1, less than 25 grams per square meter as required by claim 5, comprises polyester fibers having an average diameter of less than 20 microns as required by claim 1 or 7 microns as required by claim 5, the first epoxy resin comprises 27% by weight, the second epoxy comprises 22% by weight of the adhesive, the first hydroxy-containing compound comprises 10% by weight and has a hydroxy equivalent weight of about 284 and the second hydroxy-containing compound comprises 10% by weight of the adhesive and has a hydroxy equivalent weight of about 38 since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the fiber diameter, basis weight and amount of the two epoxies and hydroxy-containing compounds in order to create a lightweight, flexible composite with the ideal adhesive with the proper mechanical properties.

As to claims 17 - 20, the limitations of the patent are discussed above.

4. Claims 1, 6 – 8, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willett (WO 99/57197) in view of Menzies et al. (US 2003/0104746), Arakawa et al. (JP 57143380) and Pachl et al. (US 6,174,932)

Willett teaches a curable composition formed by mixing components comprising 10 to 70 weight percent of curable epoxy resin, an effective amount (about 1 to 25 weight percent [page 12, lines 8 – 10]) of curative for the epoxy resin, equated to the Applicant's "photoinitiators", 10 to 85 weight percent of thermoplastic ethylene-vinyl acetate copolymer and 5 to 60 weight percent of a thermoplastic polyester resin (Abstract). The curable composition may further comprise a hydroxyl-containing material at an amount of 0 to 25 percent by weight of the epoxy containing material in the composition (page 15, lines 13 – 15) and various additives, at an amount of up to about 50 percent, preferably up to 30 by volume (page 17, lines 13 – 23). Willett teaches that the epoxy resin used can be a mixture of various epoxy resins (page 4, lines 25 – 30). Willett teaches that the ethylene-vinyl acetate resin comprises about 40 to 70 percent vinyl acetate by weight of the copolymer (page 12, lines 20 – 24). Willett teaches that the hydroxyl-containing compound can comprise polyoxypropylene glycols (page 16, lines 8 – 11). Willett teaches that the curable composition may be applied to a wide variety of substrates including plastics, metals, ceramics, glass and cellulosic materials (page 18, lines 22 – 29).

As to claims 8 and 21, Willett teaches the claimed invention except comprises nylon fibers having a trilobal cross-sectional shape.

Menzies et al. is directed to laminated elastic composites suitable for use in tapes (page 1, [0002]). Menzies teaches that the composite comprises a layer of pressure-sensitive adhesive 42 applied on one of the nonwoven cover webs 18, 32 (see Figure 8 and page 5, [0064]). Menzies teaches that the nonwoven web can be made of any thermoplastic polymer such as polyester, polypropylene and nylon (page 3, [0049]). In Example 16, Menzies teaches that the nonwoven web can comprise a layer of Trilobal PBN-II nylon (page 13, [0131]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyester nonwoven as suggested by Menzies as the substrate of the composite of Willett motivated by the desire to use a commonly used and cost-efficient material.

As to claims 1, 17 and 19, Willett in view of Menzies teaches the claimed invention except fails to disclose that that the adhesive mixture completely embeds at least one web of fibers.

Arakawa et al. is directed to a pressure-sensitive double adhesive tape (Title). Arakawa teaches impregnating a non-woven cloth with a flexible epoxy resin to form a pressure sensitive adhesive layer on both sides of the cloth (Abstract). Arakawa notes that impregnating the cloth improves strength and adherence properties of the tape (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to fully embed, or impregnate, the web material as suggested by Arakawa rather than partially embedding the web material as implied by Willett in view of Menzies motivated by the desire to improve the strength and adherence properties of the tape.

As to claims 7 and 21, Willett in view of Menzies and Arkawa teaches the claimed invention except fails to teach that the hydroxyl-containing compound can additionally contain another hydroxyl compound comprising micronized phenoxy resin having a number average molecular weight of from about 10,000 to about 16,000.

Pachl et al. teaches a UV curable sealant composition (Abstract). The composition comprises at least one epoxy, at least one and (optionally two or more) polyols, at least one thickener or filler, at least one monomer and at least one phenoxy resin such as PAPHEN phenoxy resin PKHP 200 supplied by Phenoxy Specialists. According to the Phenoxy Specialists website, PKHP 200 is a micronized phenoxy resin having a number average molecular weight of 10,000 - 16,000.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the phenoxy resin of Pachl in the curable composition of Willett in view of Menzies and Arkawa motivated by the desire to improve the solvent and moisture resistance of the cured composition (Pachl, column 6, lines 45 – 47).

As to claims 1, 6 – 8 and 21, Willett in view of Menzies, Arkawa and Pachl disclose the claimed invention except for that the web of fibers has a basis weight of less than 30 grams per square meter as required by claim 1, the fiber diameter is less than about 20 microns as required by claims 1 and 8, the web of fibers has a basis weight less than 10 grams per square meter as required by claim 8, the hydroxyl-containing compounds are present in an amount up to about 30 weight percent of the adhesive material as required by claim 1 or about 9 to 20 weight percent of the adhesive material as required by claim 6, the first epoxy resin comprises about 27 weight

percent and the second epoxy resin comprises 22 weight percent of the adhesive material as required by claim 7, the first hydroxy-containing compound comprises 10% by weight and has a hydroxy equivalent weight of about 284 and the second hydroxy-containing compound comprises 10% by weight of the adhesive, has a hydroxy equivalent weight of about 38 and has a molecular weight of about 700 as required by claim 7, the first epoxy resin comprises 27% by weight and has an epoxy equivalent weight of about 185 to about 192, the second epoxy comprises 22% by weight of the adhesive and has an epoxy equivalent weight of about 525 to about 550, the first hydroxy-containing compound comprises 10% by weight and has a hydroxy equivalent weight of about 38 and second hydroxy-containing compound comprises 10% by weight and has a hydroxy equivalent weight of about 38 as required by claim 21. It should be noted that the basis weight, fiber diameter and amount of hydroxyl-containing compounds is a result effective variable. As the basis weight and fiber diameter decreases, the composite becomes more flexible and lightweight. As the equivalent-weight of the hydroxyl-containing material increases, the flexibility of the sealant composition correspondingly increases although there may be a consequent loss in cohesive strength. Similarly, decreasing equivalent weight may result in a loss of flexibility with a consequent increase in cohesive strength (Willett, page 16, lines 20 – 27). It should be noted that weight percentage, epoxy equivalent weight and hydroxy equivalent weight are a result effective variables. For example, if the amount of the first epoxy resin increased, the epoxy would exhibit more properties of the first epoxy resin rather than the second epoxy resin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an adhesive with the above described parameters since it has been held that discovering an optimum value of a result effective variable involves only

routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the level of hydroxyl-containing compounds to properly balance the level of cohesive strength and flexibility. In the present invention, one would have been motivated to optimize the fiber diameter, the basis weight and amount of the two epoxies and hydroxy-containing compounds in order to create a lightweight composite with the ideal adhesive with the proper mechanical properties.

As to claims 1 and 8, although Willett in view of Menzies, Arkawa and Pachl do not explicitly teach the claimed air permeability value of more than about 600 cfm/ft^2 as required by claims 1 or of more than about 1200 cfm/ft^2 as required by claim 8 as measured by ASTM D737-75 or ASTM D737-80 and a light permeability value of more than about 10% as required by claims 1 or of more than about 90% as required by claim 8 as measured by Light Permeability Text LPT, it is reasonable to presume that an air permeability value of more than about 600 cfm/ft^2 as required by claim 1 as measured by ASTM D737-75 or ASTM D737-80 and a light permeability value of more than about 10% as required by claim 1 as measured by Light Permeability Text LPT is inherent to Willett in view of Menzies, Arkawa and Pachl. Support for said presumption is found in the use of like materials (i.e. a non-woven web comprising fibers having a diameter less than 20 microns and a basis weight of less than 30 grams per square meter), which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Willett in view of Menzies, Arkawa and Pachl product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

As to claims 19 and 21, the limitations of the patent are discussed above.

5. Claims 1, 9 – 11, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakasuga et al. (US 6,376,070) in view of Willett et al. (US 6,136,398), Menzies et al. (US 2003/0104746) and Arakawa et al. (JP 57143380).

Nakasuga et al. is directed to a sheet-form, curable pressure-sensitive adhesive (Abstract).

Nakasuga teaches an adhesive comprising a high molecular weight polymer such as an acrylic polymer, a compound containing an epoxy group and a polymerization initiator (Abstract). One of the preferred embodiments of the high molecular weight polymer, equated to Applicant's "acrylate resin", is a compound which contains at least one (meth)acryloyl group and at least one hydroxyl group per molecule (column 3, lines 59 – 62). Some examples include 2-hydroxyethyl (meth)acrylates, 3-hydroxypropyl (meth)acrylates, 2-hydroxypropyl (meth)acrylates, 4-hydroxybutyl (meth)acrylates and 2-hydroxybutyl (meth)acrylates (column 3, lines 64 – 67). The compound containing an epoxy group, equated to Applicant's "epoxy resin", can include epoxy resins such as bisphenol A type epoxy resins, bisphenol F type epoxy resins, novolak type epoxy resins and alicyclic aliphatic epoxy resins (column 5, lines 50 – 67). It should be noted that Nakasuga uses two different epoxy resins for examples 6 through 9 with a weight ratio of 60 – 65%:30% (Table 1 and column 15, lines 36 – 46). The polymerization initiator, equated to Applicant's "photoinitiator", can comprise dicyandiamides, hydrazides, imidazole compounds, amine adducts, amine imides, sulfonium salts, ammonium salts, pyridinium salts and the like (column 6, lines 45 – 67). Additionally, Nakasuga teaches that other additives may be used to improve cohesive strength and/or heat

resistance such as curable monomers, tackifying resins, thickeners, beads or balloons, monofibers or fibrous chips (column 9, lines 10 – 63). It should be noted that the mixing proportions of the high molecular weight polymer, the compound containing an epoxy group and the polymerization initiator are not particularly limited, as long as the adequate tackiness of the sheet-form, curable pressure-sensitive adhesive and the adequate adhesive strength thereof after the activation energy application are insured to be obtained (column 7, lines 65 – 67 and column 8, lines 1 – 9). In one embodiment, 30 - 70 parts by weight of the acrylic polymer is preferably added to 30 - 70 parts by weight of the compound containing the epoxy group and 0.01 - 10 parts by weight of the cationic photoinitiator (column 8, lines 64 – 67 and column 9, line 1). The sheet-form, curable pressure-sensitive adhesive may be placed on at least one surface of a substrate such as rayon or cellulosic non-woven fabrics or sheets made of synthetic resins such as polyethylene, polyester, polypropylene and polystyrene (column 11, lines 50 – 67).

Nakasuga teaches the claimed invention except fails to teach that the structural adhesive layer contains up to about 30 weight percent of one or more hydroxy-containing compounds.

Willett teaches a curable adhesive composition comprising epoxy resin, curative for the epoxy resin, ethylene-vinyl acetate copolymer, thermoplastic polyester resin (Abstract) and various additives (page 17, lines 13 – 23). The curable composition may further comprise a hydroxyl-containing material at an amount of 0 to 25 percent by weight of the epoxy containing material in the composition (page 15, lines 13 – 15). It should be noted that the incorporation of hydroxyl containing materials, specifically polyether polyols, into the above described composition is especially desirable for adjusting the rate at which the sealant compositions cure

upon exposure to energy. Useful polyether polyols include polyoxypropylene glycols and triols having an equivalent weight of about 31 to 2250 for the diols and about 80 to 350 for the triols (column 11, lines 39 – 49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a hydroxyl containing material, particularly polyoxypropylene glycol, as suggested by Willett to the adhesive of Nakasuga motivated by the desire to adjust the curing rate of the adhesive composition upon exposure to energy.

Nakasuga in view of Willett teach the claimed invention except fails to teach that the nonwoven comprises nylon fibers having a trilobal cross-sectional shape.

Menzies et al. is directed to laminated elastic composites suitable for use in tapes (page 1, [0002]). Menzies teaches that the composite comprises a layer of pressure-sensitive adhesive 42 applied on one of the nonwoven cover webs 18, 32 (see Figure 8 and page 5, [0064]). Menzies teaches that the nonwoven web can be made of any thermoplastic polymer such as polyester, polypropylene and nylon (page 3, [0049]). In Example 16, Menzies teaches that the nonwoven web can comprise a layer of Trilobal PBN-II nylon (page 13, [0131]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polyester nonwoven as suggested by Menzies as the substrate of the composite of Nakasuga in view of Willett motivated by the desire to use a commonly used and cost-efficient material.

Nakasuga in view of Willett and Menzies teaches the claimed invention except fails to disclose that that the adhesive mixture completely embeds at least one web of fibers.

Arakawa et al. is directed to a pressure-sensitive double adhesive tape (Title). Arakawa teaches impregnating a non-woven cloth with a flexible epoxy resin to form a pressure sensitive adhesive layer on both sides of the cloth (Abstract). Arakawa notes that impregnating the cloth improves strength and adherence properties of the tape (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to fully embed, or impregnate, the web material as suggested by Arakawa rather than partially embedding the web material as implied by Nakasuga in view of Willett and Menzies motivated by the desire to improve the strength and adherence properties of the tape.

As to claims 1, 9 - 11 and 22, Nakasuga in view of Willett, Menzies and Arakawa discloses the claimed invention except for that the web of fibers has a basis weight of less than 30 grams per square meter as required by claim 1, less than 25 grams per square meter as required by claim 11 and an average diameter of less than about 20 microns as required by claims 1 and 11, the additives are present in the amount of up to 50 weight percent as required by claim 1, the additives are present in the amount of up to 10 weight percent as required by claim 9, the adhesive contains about 53.9 weight percent of a first epoxy resin and 9.8 weight percent of a second epoxy resin as required by claim 10, the molar ratio of ethylene, propylene or butylene to (meth)acrylate is less than 2 as required by claim 10 and the first epoxy resin has an epoxy equivalent weight of about 185 to 192, the second epoxy resin has an epoxy equivalent weight of about 525 to about 550 as required by claim 10 and the hydroxyl-containing compound

having a number average molecular weight of about 700 and a hydroxy equivalent weight of about 38 as required by claim 10 and the first epoxy resin comprises 53.9% by weight and has an epoxy equivalent weight of about 185 to about 192, the second epoxy comprises 9.8% by weight of the adhesive and has an epoxy equivalent weight of about 525 to about 550 and the hydroxy-containing compound comprises 4.3% by weight and has a hydroxy equivalent weight of about 38 as required by claim 22.. It should be noted that the basis weight, fiber diameter, amount of additives present in the adhesive composition, amount of first epoxy and second epoxy resin, the molar ratio of ethylene, propylene or butylene to meth(acrylate) and epoxy equivalent weights are a result effective variables. For example, as the fiber diameter and basis weight decreases, the composite becomes more flexible and lightweight. For example, as the amount of additives increases, the cohesive strength and heat resistance increases. For example, if the amount of the first epoxy resin increased, the epoxy would exhibit more properties of the first epoxy resin rather than the second epoxy resin. For example, as the molar ratio decreased, the properties of the (meth)acrylate would dominate the resin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an adhesive composition as described above, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount the amount of additives in order to create an adhesive with sufficient cohesive strength and heat resistance. In the present invention, one would have been motivated to optimize basis weight, the fiber diameter and the amount of the two epoxies and molar ratio in order to create a lightweight composite with an adhesive with the proper mechanical properties.

As to claims 1 and 11, although Nakasuga in view of Willett, Menzies and Arakawa does not explicitly teach the claimed air permeability value of more than about 600 cfm/ft^2 as required by claims 1 or of more than about 1300 cfm/ft^2 as required by claim 11 as measured by ASTM D737-75 or ASTM D737-80 and a light permeability value of more than about 10% as required by claims 1 or of more than about 75% as required by claim 11 as measured by Light Permeability Text LPT, it is reasonable to presume that an air permeability value of more than about 600 cfm/ft^2 as required by claim 1 or of more than about 1300 cfm/ft^2 as required by claim 11 as measured by ASTM D737-75 or ASTM D737-80 and a light permeability value of more than about 10% as required by claims 1 or of more than about 75% as required by claim 11 as measured by Light Permeability Text LPT is inherent to Nakasuga in view of Willett, Menzies and Arakawa. Support for said presumption is found in the use of like materials (i.e. a non-woven web comprising fibers having a diameter less than 20 microns and a basis weight of less than 30 grams per square meter), which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Nakasuga in view of Willett, Menzies and Arakawa product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

As to claims 19 and 22, the limitations of the patent are discussed above.

Response to Arguments

6. Applicant's arguments with respect to claims 1- 24 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Boyd
April 26, 2004

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